The Metropolitan Chicago Data Science Corps (MCDC): Learning from Data to Support Communities

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DEPAUL UNIVERSITY

BACKGROUND

- ▸ Established and funded by an NSF grant from 2021 to 2024
- ▸ The main pillars of the MCDC are to advance the development of data acumen via the combination of:
  - ▸ University expertise and curriculum
  - ▸ Community partners
  - ▸ Student learning and engagement

THE MCDC PARTNERSHIP

Figure: Geographic distribution and connectivity of MCDC institutions
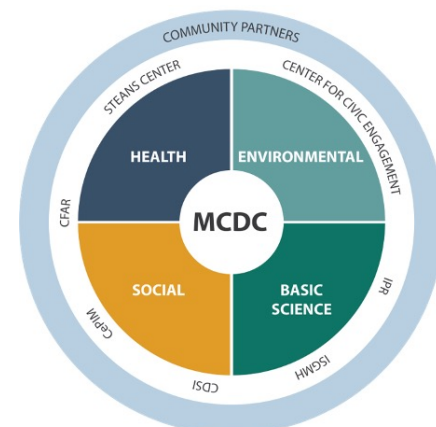
Participating Institutions:
- ▸ Northwestern University
- ▸ Northeastern Illinois University
- ▸ DePaul University
- ▸ University of Illinois Urbana-Champaign School of Information Sciences
- ▸ Chicago State University

ACKNOWLEDGEMENTS

LINKING TO COMMUNITY PARTNERS

Scientists and students in the MCDC "inner circle" can connect to community partners in the "outer circle" via existing collaborative centers

- ▸ **DePaul University:** Steans Center, Center for Data Science (CDSI)
- ▸ **Northwestern University:** Center for Civic Engagement, Institute for Policy Research (IPR), Institute for Sexual and Gender Minority Health and Wellbeing (ISGMH), Center for Prevention Implementation Methodology (CePIM), Third Coast Center for AIDS Research (CFAR)
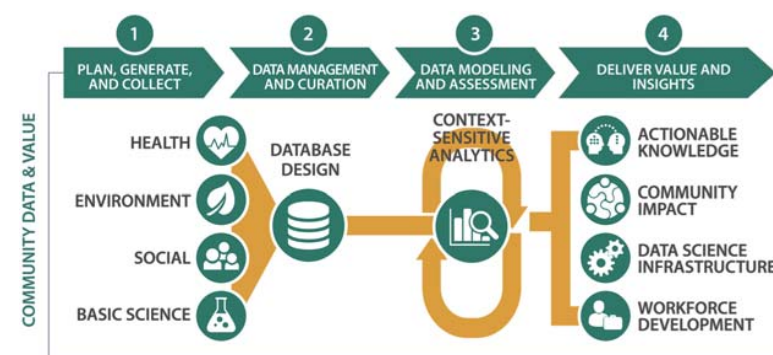

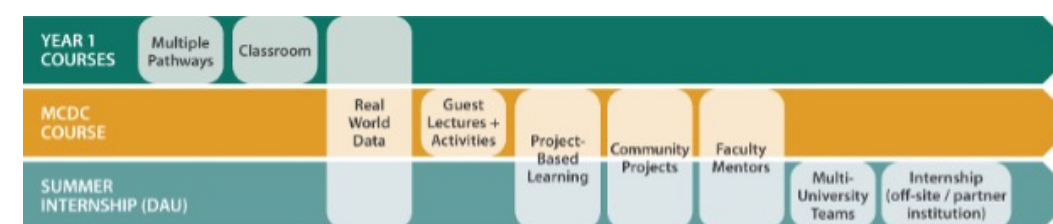Figure: MCDC students learn about all stages of data refinery

CURRICULUM

Figure: The MCDC Curriculum

Integration of MCDC into a data science curriculum occurs at three key points, which offers students learning opportunities that build core knowledge, layer data acumen, and advance cross-disciplinary team competencies:

1. **Year 1 – Pathway courses:** Existing data science and data-driven domain courses that use real-world data and together present multiple pathways of entry into MCDC
2. **Year 2 – Practicum course:** A project-based MCDC course in which student groups work with community partners under the guidance of faculty mentors
3. **Summer term after Year 2:** An optional, selective MCDC Data Science Application for Undergraduates (DAU) in which cross-institutional student groups each work with an engaged community partner on a specific project, embedded with the community partner (internship) or with a faculty mentor at one of the implementation institutions

EVALUATIONS

Practicum Survey of Students – Spring 2022
All reported scores are on a scale from 1 (no confidence) to 5 (very confident)
- ▸ 39 students responded – 18 from Northwestern and 11 from DePaul
- ▸ **High confidence in:** Working as part of a team (mean = 4.29), Professional conduct (mean = 4.5)
- ▸ **Low confidence in:** Knowledge of one domain (mean = 3.36)
- ▸ **What they like:** Tackling real world problems, Teamwork
- ▸ **What they still need:** Communication between team and community partners, Better technical skills (coding, R)
- ▸ **Obstacles:** Time, Communication and working remote, Data issues

Practicum Survey of Community Partners – Spring 2022
Four community partners were surveyed.
- ▸ **Motivation for collaborating with MCDC:** Gathering data that could be used in grant development, Help in data analysis, Finding new ways to manage the data
- ▸ **Expectations for student meetings:** Increasing their knowledge of non-profits, Understanding data and metrics, Combining data and metrics in a format that can be used for fundraising, Student work connects back to the impact the community partners intend to have
- ▸ **Benefits of the MCDC partnership:** The final deck of slides provided by students can be used in grant writing and the community partners' advocacy work, Building new collaborations in the Chicago region
- ▸ **Challenges of the MCDC partnership:** The project period was a little too short, Students did not have time to really dig into the data

DAU Internship Survey – Summer 2022
Responses from four students who worked on one of the DAU summer internships were recorded. This project was about industrial composting in Cook County.
- ▸ **What did students like most about project:** Having an impact on the world by using data analytics, Working with people from other institutions with different backgrounds, Learning from and collaborating with each other
- ▸ **What did students gain from working on the project:** Insight into a real-life scenario in the workplace, Presenting for clients, Working with new people, More knowledge about the topic of composting and food waste, Learned how research could help with new legislation
- ▸ **What obstacles did students encounter:** Establishments surveyed were not very forthcoming, Finding proper information on composting, Filling out a lot of Freedom of Information Act forms in conjunction with contacting companies
- ▸ **What was the most impactful takeaway from working on the project:** Impact of data science and how the tools can be useful in many areas of life, Learned how composting is done, Composting data are dependent on where people live, Learned about landfills, Acquiring data is not easy!, Opened eyes to how important it is to work with other from different disciplines, Great to see the work done and that legislation might come from it

FUTURE WORK

- ▸ **Summer 2023:** running the DAU's at multiple MCDC institutions
- ▸ Based on evaluation data, continue to improve the Year 2 practicum course and the experience for community partners.

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